

Amherst Landfill Monitoring Program

Ellie Kurth
Department of Public Works

General Monitoring Requirements

- ▶ MassDEP Comprehensive Site Assessment (CSA) Approval
 - Groundwater
 - Surface water
 - Landfill gases
- ▶ Annual environmental monitoring report to MassDEP

Water Monitoring Requirements

- ▶ Water quality parameters:
 - 70 volatile organic compounds (VOCs)
 - 14 metals
 - 7 inorganics (e.g., alkalinity, solids, nitrate)
 - Field parameters (e.g., pH, dissolved oxygen)
- ▶ State–certified laboratory
- ▶ Groundwater data:
 - Primary Maximum Contaminant Levels (MCLs)
 - Secondary MCLs (SMCLs)
- ▶ Surface water data compared to National Recommended Water Quality Criteria (NRWQC)
- ▶ Groundwater flow direction analysis

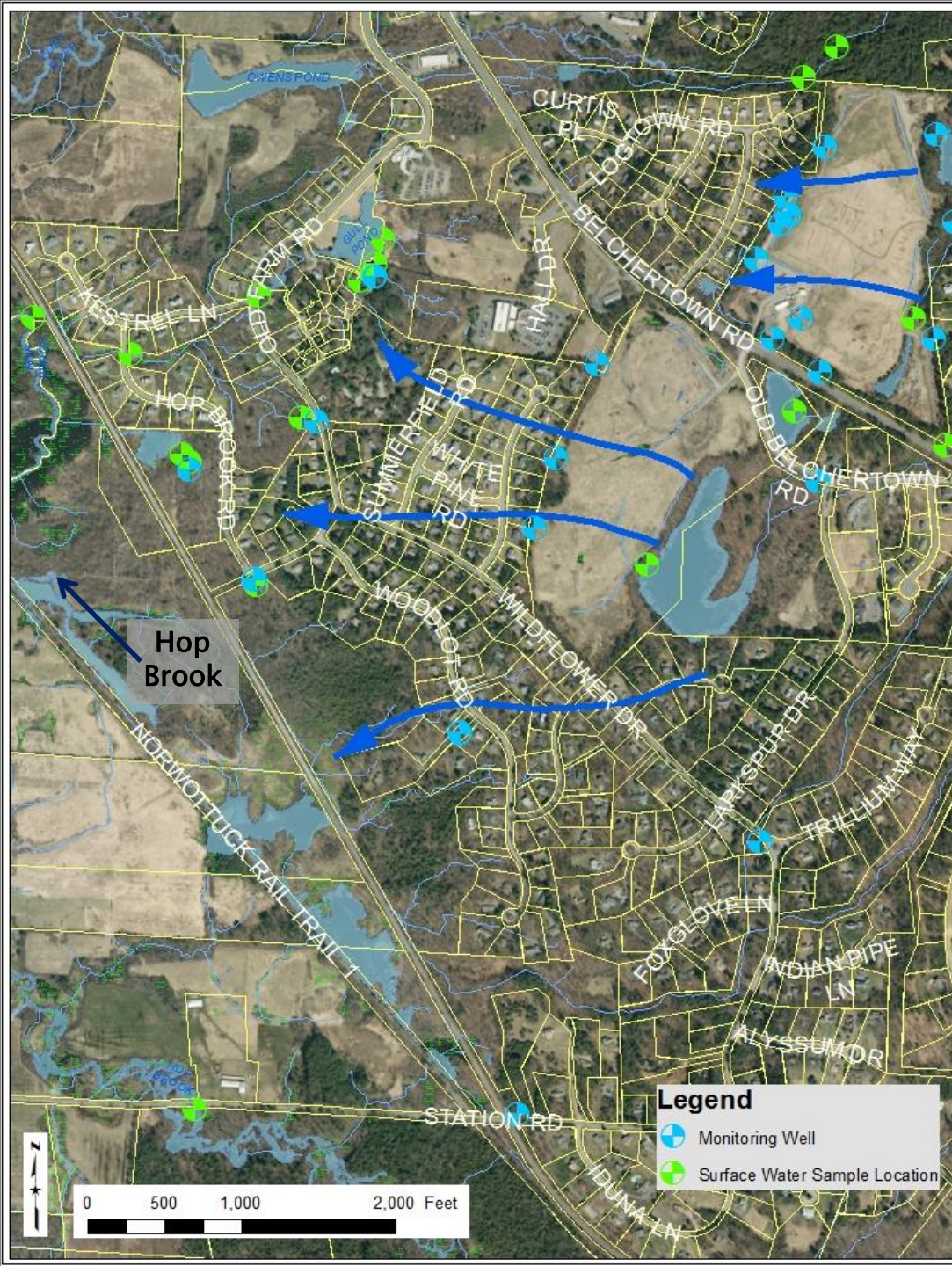
Monitoring Requirements– New Landfill

- ▶ CSA Approval in 2008
- ▶ Annual monitoring:
 - 12 groundwater wells
 - 5 surface water locations
 - Groundwater contour plan
- ▶ Biannual landfill gas monitoring:
 - 9 gas wells
 - Transfer station buildings
- ▶ 3rd party inspections every other year (2015 inspection regulations)

Monitoring Requirements– Old Landfill

- ▶ CSA Approval in 2010
- ▶ Annual monitoring:
 - 15 groundwater wells
 - 6 surface water locations
 - Groundwater contour plan
- ▶ Biannual landfill gas monitoring:
 - 10 deep wells
 - 25 shallow points
- ▶ Annual 3rd party inspections (2015 inspection regulations)

Monitoring Locations



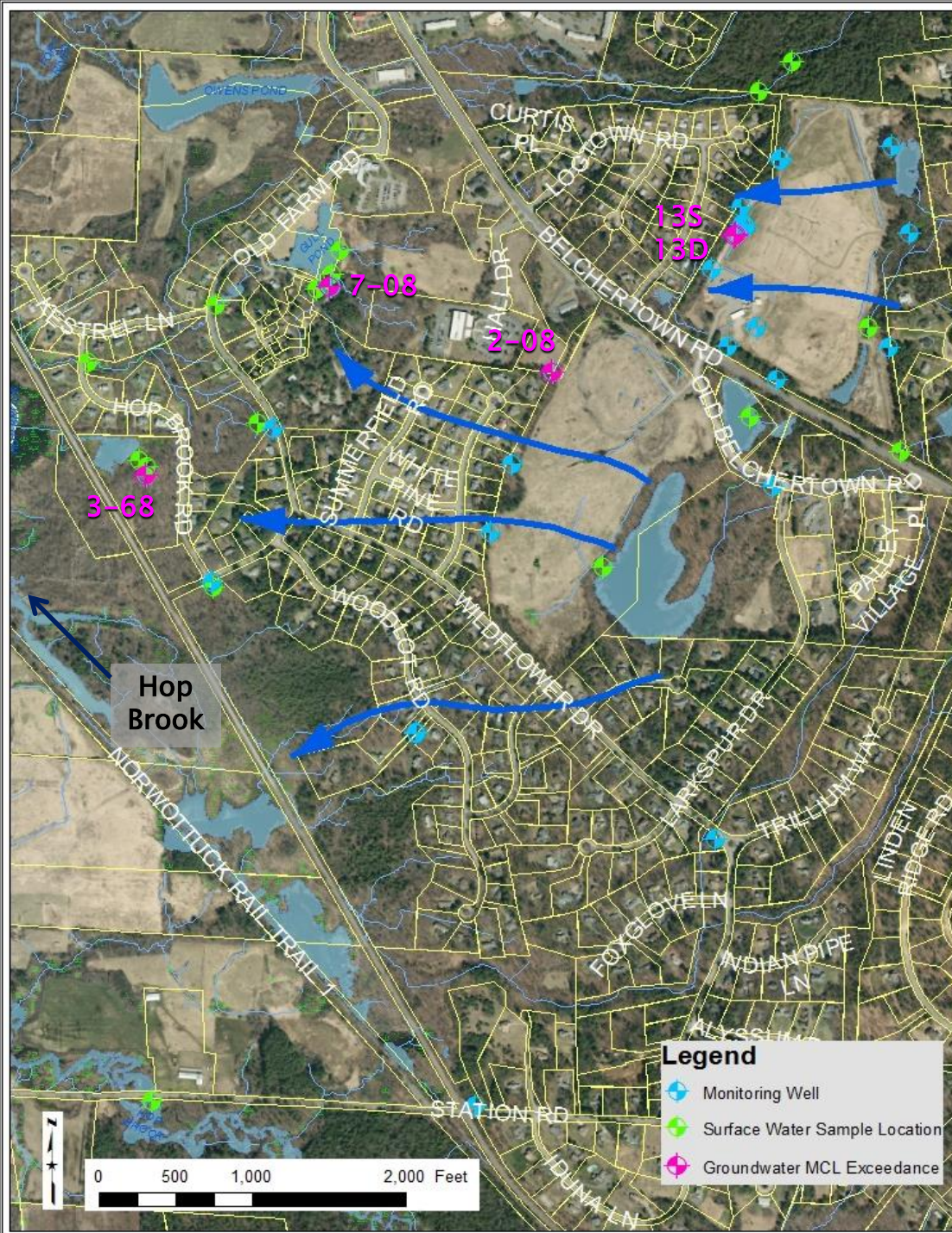
Results– Groundwater

► MCL exceedances

	Well	Parameter	Concentration (mg/l)	MCL (mg/l)
2008	None	–	–	–
2009	None	–	–	–
2010	3–68	Cadmium	0.007	0.005
		Lead	0.058	0.015
	7–08	Cadmium	0.006	0.005
		Lead	0.050	0.015
2011	None	–	–	–
2012	3–68	Selenium	0.07	0.05
	2–08		0.09	
	13S		0.08	
	13D		0.22	
2013	2–08	Arsenic	0.02	0.01
2014	2–08	Arsenic	0.01	0.01

Locations of MCL Exceedances

- ▶ 13S & 13D: Se
- ▶ 3-68: Se, Cd, Pb
- ▶ 7-08: Cd, Pb
- ▶ 2-08: Se, As

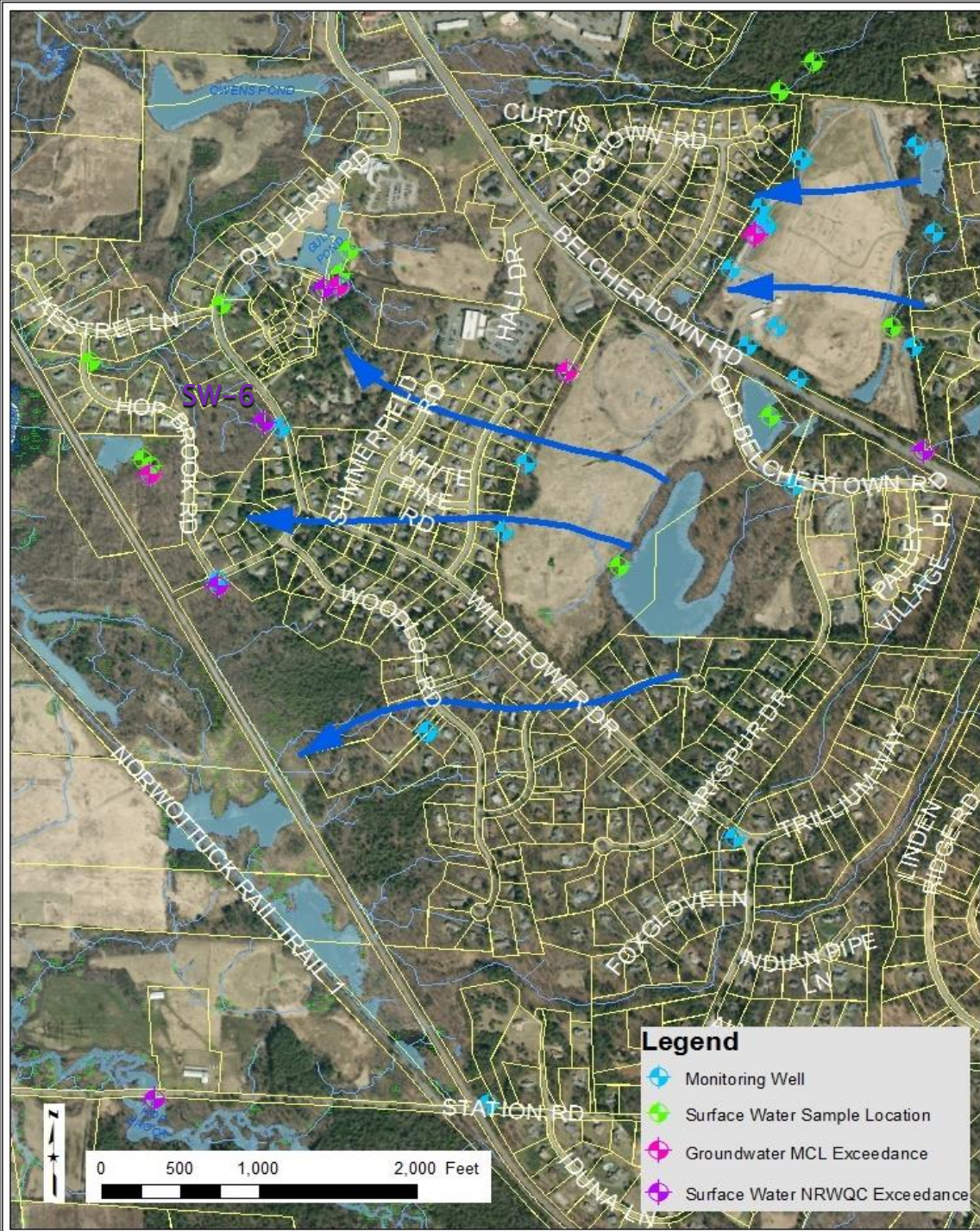


Results– Surface Water

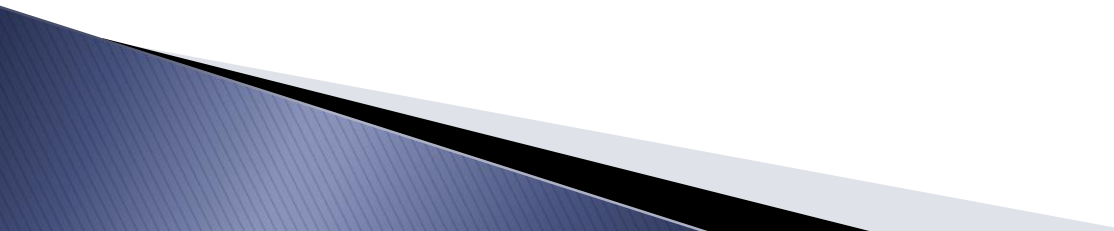
- ▶ Slightly elevated iron (1.1–3.4 mg/l vs NRWQC of 1.0 mg/l) at 4 locations
- ▶ KC Trail wetland
 - Iron: 4.1–40.2 mg/l
 - Selenium 0.08 mg/l above NRWQC (0.004 mg/l) in 2012
- ▶ Alkalinity rarely below the NRWQC minimum (20 mg/l)

Locations of NRWQC Exceedances

- ▶ SW-6: KC Trail Wetland (Fe, Se)



Results– Landfill Gases

- ▶ Both landfills assessed in winter and summer
 - ▶ No indications of landfill gases migrating off site at either landfill
 - ▶ Monitoring results in compliance with regulatory standards
- 

Summary

- ▶ Ongoing, comprehensive program of groundwater, surface water, and landfill gas monitoring
 - ▶ Results generally within regulatory standards
 - ▶ Additional testing if warranted
- 